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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/782,617	02/19/2004	Jeffrey P. Bradford	RPS920030131US1 (IRA-10-5	5100

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EXAMINER	
MERED, HABTE	

ART UNIT	PAPER NUMBER
2616	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/782,617	BRADFORD ET AL.	
	Examiner	Art Unit	
	Habte Mered	2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 February 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *19 February 2004* is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *2/19/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This Office Action is in response to communication filed on 2/19/2004.

2. Claims 1-18 are pending. Claims 1, 7, and 13 are the base independent claims.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. **Claims 1-18** are rejected under 35 U.S.C. 103(a) as being unpatentable over Sagfors (US Pub. No. 2004/0218617 A1) in view of Barker et al (US Pub. No. 2002/0131365 A1), hereinafter referred to as Barker.

Sagfors teaches congestion and delay handling in a packet data network.

2. Regarding **claims 1, 7, and 13**, Sagfors discloses a method for managing and transmitting data packets flow in a computer network system **(Figure 1)**, comprising the steps of:

(a) providing a queue having a queue level; **(See Paragraph 36)**

(b) determining the queue level; **(See Paragraphs 62 and 63)**

(c) specifying a queue hysteresis threshold (Tdrop is hysteresis threshold as illustrated in Paragraphs 105, 106, and 110) and a queue low threshold **(Tmin is a queue low threshold as shown in Paragraphs 105, 106, and 110)**;

(e) if the queue level is greater than or equal to the hysteresis threshold, then dropping packets from the plurality of packets **(See Figure 3 case for q > Tdrop = yes leading**

to discarding packets) and transmitting a remainder of the plurality of data packets to the queue;

(f) if the queue level is less than the hysteresis threshold, then transmitting the plurality of data packets to the queue without dropping any data packets **(See Figure 3 case for q > Tdrop =No leading to discarding packets)**; and

(g) if the queue level is less than the low threshold **(See Figure 4, q > Tmin = NO leads accepting packet case increasing transmission of packets into queue)**, then recalculating the transmit probability.

Sagfors fails to teach a method that further includes step (d) providing a transmit probability and queue level responsive to the transmit probability.

Barker teaches flow control mechanisms.

Barker discloses a method that further includes step (d) providing a transmit probability and queue level responsive to the transmit probability. **(See Figures 10-12 and Paragraphs 10, 17 and 29)**

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Sagfors' method to incorporate a step for providing a transmit probability and queue level responsive to the transmit probability. The motivation to calculate transmit probability is to save switch processor power by actually discarding packets based on the transmit probability table as opposed to processing each packet as detailed by Barker in paragraph 12.

3. Regarding **claims 2, 8, and 14,** the combination of Sagfors and Barker disclose a method further comprising the steps of:

(h) ascertaining an arrival rate of data packets into the queue **(See Sagrofs Figure 7)**;

(i) ascertaining a sending rate of data packets out from the queue **(See Sagrofs Figure 7)**;

(j) if the queue level is greater than or equal to the hysteresis threshold and less than the sending rate from the queue, then: (j)(1) decreasing the queue level until it is less than the hysteresis **(See Sagrofs Paragraphs 143-148)**

(j2) dropping packets from the plurality of data packets responsive to the transmit probability until the queue level decreases to at least the low threshold. **(See Barker Figure 10)**

4. Regarding **claims 3, 9, and 15,** the combination of Sagfors and Barker disclose a method further comprising the steps of:

(k) providing a traffic flow condition parameter indicating either a first traffic flow condition or a second traffic flow condition **(See Sagrofs Figure 6 –data rate and threshold value)**; (l) ascertaining the traffic flow condition parameter; and wherein the step (g) of recalculating the transmit probability is performed through applying a normal transmit probability algorithm or an extended transmit probability algorithm, comprising the steps of: (g)(1) applying the normal transmit probability algorithm to increment or decrement the transmit probability responsive to the traffic flow condition parameter indicating the first traffic flow condition ; and (g)(2) applying the extended transmit probability algorithm to increment or decrement the transmit probability responsive to the traffic flow condition parameter indicating the second traffic flow condition. **(See Barker's Paragraph 94 in relation to Figure 10)**

5. Regarding **claims 4, 10, and 16**, the combination of Sagfors and Barker disclose a method wherein the traffic flow condition parameter is a hysteresis flag having a value of ON for the first traffic flow condition and a value of OFF for the second traffic flow condition. **(See Sagfors paragraph 34)**

6. Regarding **claims 5, 11 and 17** the combination of Sagfors and Barker disclose a method further comprising the steps of: if the hysteresis flag is OFF and the queue level is less than the low queue threshold and an offered load is below a link capacity, switching the hysteresis flag to ON; **(See Sagfors Figure 4 and paragraphs 121 and 122)** wherein if the hysteresis flag is ON and the queue level is greater than or equal to the hysteresis threshold, then the step (e) of dropping packets and transmitting a remainder of data packets to the queue further comprises the step of switching the hysteresis flag to OFF **(See Sagfors Figure 4 and Paragraphs 123 and 124)**; and wherein the step (f) of transmitting the plurality of data packets to the queue without dropping any and the step (g) of recalculating the transmit probability are performed if the hysteresis flag is ON. **(See Barker's paragraph 94 and Figure 10)**

7. Regarding **claims 6, 12, and 18,** Sagfors fails to disclose a method of calculating transmit probability based on Bandwidth Allocation Transmit (BAT) algorithm further comprising the step of providing a data flow parameter i; wherein the transmit probability is a transmit fraction Ti; and the step (g) of recalculating the transmit probability comprises applying a Bandwidth Allocation Transmit (BAT) algorithm, wherein: the step (g)(1) is performed if the hysteresis flag is ON, and Ti is incremented or

decremented according to the following steps:

(g)(la) if fi(t) <= fi,min then Ti(t + dt) = min(1, Ti(t) + w);

(g)(lb) else if fl(t) > fi,max then Ti(t +dt) = Ti(t)(1-w);

(g)(lc) else if B(t) = 1 then Ti(t + dt)= min(1, Ti(t)+CiBavg(t));

(gl)(d) Otherwise then Ti(t + dt) = Ti(t)(1-DiOi(t));

where Ci = (S + fi,min-(fl,min + f2,min +... + fn,min))/16; and

Di = (S - fi,min)*4; and the step (g)(2) if performed if the hysteresis flag is OFF, and Ti is incremented or decremented according to the following steps:

(g)(2a) determining a direction of queue level;

(g)(2b) if the queue level is increasing, then Ti = F(Ci); and

(g)(2c) else if the queue level is decreasing, then Ti = G(Di)

where F(Ci) is a BAT decreasing function and G(Di) is a BAT increasing function.

Barker discloses disclose a method of calculating transmit probability based on Bandwidth Allocation Transmit (BAT) algorithm further comprising the step of providing a data flow parameter i; wherein the transmit probability is a transmit fraction Ti; and the step (g) of recalculating the transmit probability comprises applying a Bandwidth Allocation Transmit (BAT) algorithm, wherein:

the step (g)(1) is performed if the hysteresis flag is ON, and Ti is incremented or decremented according to the following steps:

(g)(la) if fi(t) <= fi,min then Ti(t + dt) = min(1, Ti(t) + w);

(g)(lb) else if fl(t) > fi,max then Ti(t +dt) = Ti(t)(1-w);

(g)(lc) else if B(t) = 1 then Ti(t + dt)= min(1, Ti(t)+CiBavg(t));

(gl)(d) Otherwise then Ti(t + dt) = Ti(t)(1-DiOi(t));

where Ci = (S + fi,min-(fl,min + f2,min +... + fn,min))/16; and

Di = (S - fi,min)*4; and the step (g)(2) if performed if the hysteresis flag is OFF, and Ti is incremented or decremented according to the following steps:

(g)(2a) determining a direction of queue level;

(g)(2b) if the queue level is increasing, then Ti = F(Ci); and

(g)(2c) else if the queue level is decreasing, then Ti = G(Di)

where F(Ci) is a BAT decreasing function and G(Di) is a BAT increasing function. **(Barker discloses these BAT functions in paragraphs 140-144 and is obvious to one ordinarily skilled in the art to come up with these values when applied to determining o f thresholds of queues)**

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Sagfors' method to incorporate a step of calculating transmit probability based on Bandwidth Allocation Transmit (BAT) algorithm. The motivation for using BAT as a flow control mechanism is that its threshold tuning mechanism is independent of changes in network load and is there for ideal for quality of service purposes as illustrated by Barker in Column 2:10-16.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Habte Mered whose telephone number is 571 272 6046. The examiner can normally be reached on Monday to Friday 9:30AM to 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Doris H. To can be reached on 571 272 7629. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

HM
06-24-2007

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